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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
ANYA, CHARLES E

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2194	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	**Applicant(s)**
	10/600,787	STEERE ET AL.
Office Action Summary	**Examiner**	**Art Unit**	
	Charles E. Anya	2194	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3*/ MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/22/08*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-64* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-64 are pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   **Claims 1-32, 34-38 and 40-49 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over U.S. Pat. No. 6,721,740 B1 to Skinner et al. in view of U.S. Pat.

No. 6,263,360 B1 to Arnold et al.

3.   As to claim 1, Skinner teaches computer-implemented method for a client to

interact with a server (figure 3), the computer-implemented method comprising:

creating a cached object from an original object ("…change is sent to those

application components…" Col. 8 Ln. 30 – 32, Col. 13 Ln. 64 – 67), the original object

being managed by the server ("…data object…" Col. 14 Ln. 21 – 29);

wherein the client interacts with a plurality of cached objects that are created on

the client from objects managed by the server (Client-side Application Logic and GUI

Component 301A Col. 14 Ln. 49 – 60);

establishing a notification bond associated with a particular object with the

server, the notification bond enabling the client to obtain a notification from the server in

response to an object related event associated with the original object ("…interest

object…" Col. 3 Ln. 1 – 19, Col. 8 Ln. 23 – 29, "…observer list…" Col. 9 Ln. 20 – 23,

Server Interest Registry 501/503 Col. 11 Ln. 5 – 13, figure 6 Col. 12 Ln. 56 – 67, Col. 13

Ln. 1 – 16);

the object related event is associated with an edit of the original object ("…data

object…undergoes modification, for example, through creation, deletion or alteration…"

Col. 8 Ln. 13 - 32, "…changed data object…" Col. 13 Ln. 18 – 30, Ln. 59 – 67);

wherein each object is associated with a different notification bond ("…interest

object…" Col. 2 Ln. 54 – 65, Col. 3 Ln. 1 – 19, Col. 8 Ln. 23 – 29); and

updating each of the cached objects with the original object after a change is

made to the original object ("…update management component…" Col. 8 Ln. 33 – 43).

Skinner is silent with reference to the notification bond remaining persistent

through a reboot of the client and server.

Arnold teaches the notification bond remaining persistent through a reboot of the

client and server ("…when lost links 210 are re-established…" Col. 6 Ln. 20 – 43, Col.

16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the system of Skinner with the teaching of Arnold

because the teaching of Arnold would improve the system of Skinner by allowing a

client in a low bandwidth client/server computing system to have access to updated,

timely information associated with a server (Arnold Col. 2 Ln. 23 – 30).

4.   As to claim 2, Skinner teaches the computer-implemented method of claim 1,

wherein the object related event includes when the original object has been modified

("…update management component…" Col. 8 Ln. 33 – 43).

5.   As to claim 3, Skinner teaches the computer-implemented method of claim 1,

wherein establishing the notification bond is performed in response to creating the

cached object ("…interest object…" Col. 3 Ln. 1 – 19, Col. 8 Ln. 23 – 29, "…observer

list…" Col. 9 Ln. 20 – 23, Server Interest Registry 501/503 Col. 11 Ln. 5 – 13, figure 6

Col. 12 Ln. 56 – 67, Col. 13 Ln. 1 – 16).

6.   As to claim 4, Skinner teaches the computer-implemented method of claim 1,

further comprising: obtaining a notification from the server; and updating the cached

object using the notification ("…update management component…" Col. 8 Ln. 33 – 43).

7.   As to claim 5, Skinner teaches the computer-implemented method of claim 1,

wherein obtaining the notification includes retrieving a notification log containing the

notification (LiveInterest 401 Col. 9 Ln. 31 – 36).

8.   As to claim 6, Skinner teaches the computer-implemented method of claim 1,

further comprising: requesting a notification log containing a notification; and

synchronizing the cache object with the original object using the notification

("...modification..." Col. 2 Ln. 54 – 65, "Update notification..." Col. 3 Ln. 1 – 11, Col. 10

Ln. 25 – 47, Col. 11 Ln. 5 – 30).

Arnold teaches reconnecting with the server after a disconnected period of time

("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43, Col. 16 Ln. 55 – 67,

Col. 17 Ln. 1 – 6).

9.   As to claim 7, Skinner teaches the computer-implemented method of claim 1,

further comprising maintaining states associated with the notification bond

("...registry..." Col. 3 Ln. 1 – 24, Col. 10 Ln. 25 – 47, Col. 8 Ln. 23 – 43, "...server

interest registry...interest object..." Col. 11 Ln. 5 – 45).

10.   As to claim 8, Skinner teaches the computer-implemented method of claim 7,

wherein the states are maintained in a persistent medium ("...registry..." Col. 3 Ln. 1 –

24, Col. 8 Ln. 23 – 43, Col. 10 Ln. 25 – 47, "...server interest registry...interest object..."

Col. 11 Ln. 5 – 45).

11.   As to claim 9, Skinner teaches the computer-implemented method of claim 8,

wherein the states include a bond number that uniquely identifies the notification bond

("...unique identifier...object ID or serial number..." Col. 8 Ln. 52 – 59).

12.   As to claim 10, Skinner teaches the computer-implemented method of claim 8, wherein the states include a aggregate bond number that is unique to the client ("...set of unique object identifiers..." Col. 8 Ln. 52 – 58).

13.   As to claim 11, Arnold teaches the computer-implemented method of claim 8, further comprising reestablishing the states on the client after a restart ("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43, Col. 16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

14.   As to claim 12, Arnold teaches the computer-implemented method of claim 11, further comprising synchronizing the states on the client and corresponding states on the server ("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43, Col. 16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

15.   As to claims 13, 19, 40 see the rejection of claim 1 above.

16.   As to claim 14, see the rejection of claim 2 above.

17.   As to claim 15, see the rejection of claim 3 above.

18.   As to claim 16, Skinner teaches the computer-implemented method of claim 13,
further comprising: determining an object related event that was not caused by the client
("…received from…clients …or…servers…" Col. 17 Ln. 14 – 18); creating a notification
in accordance with the notification bond; and providing the notification to the client
("…interest registry is traversed to determine those application components that have
registered…" Col. 8 Ln. 23 – 43, "…notification is passed to each interest object
registered…" Col. 11 Ln. 1 – 26).

19.   As to claim 17, Skinner teaches the computer-implemented method of claim 13,
further comprising: determining an object related event that was not caused by the client
("…received from…clients …or…servers…" Col. 17 Ln. 14 – 18); creating a notification
in accordance with the notification bond (Col. 3 Ln. 1 – 11, "…interest registry is
traversed to determine those application components that have registered…" Col. 8 Ln.
23 – 43, "…notification is passed to each interest object registered…" Col. 11 Ln. 1 –
26) and recording the notification in a notification log (LiveCollectedUpdates 402 Col. 9
Ln. 38 – 55, LiveCollectedUpdates Object 512 Col. 12 Ln. 25 – 42).

20.   As to claim 18, Skinner teaches the computer-implemented method of claim 17,
further comprising: establishing a connection with the client; and sending the notification
log to the client (Col. 14 Ln. 1 – 7, Client-Side Communication Management
Components 305A/Server-Side Communication Management Components 305B Col.
16 Ln. 21 – 65).

21.   As to claim 20, Skinner teaches the distributed file system of claim 19, wherein the bond manager is configured to provide notifications to the clients in accordance with the notification bonds (Col. 3 Ln. 1 – 11, "…interest registry is traversed to determine those application components that have registered…" Col. 8 Ln. 23 – 43, "…notification is passed to each interest object registered…" Col. 11 Ln. 1 – 26).

22.   As to claim 21, Skinner teaches the distributed file system of claim 19, wherein the server further comprises a file system manager configured to manage the original objects (Application Server 307 Col. 14 Ln. 21 – 31) and wherein the bond manager comprises a filter component configured to determine object related events by monitoring communication traffic associated with the file system manager ("…update notifications are filtered…" Col. 10 Ln. 25 – 35).

23.   As to claim 22, Skinner teaches the distributed file system of claim 19, wherein the bond manager is configured to maintain a bond table and wherein the bond table includes states that relate each notification bond with an original object and a client to whom the notification is to be provided ("…registry…" Col. 3 Ln. 1 – 24, "…interest registry…" Col. 8 Ln. 23 – 43, Col. 10 Ln. 25 – 47, "…server interest registry…" Col. 11 Ln. 5 – 45).

24.   As to claim 23, Skinner teaches the distributed file system of claim 19, wherein

the bond manager is configured to maintain a notification log and wherein the

notification log includes notifications for the client (LiveCollectedUpdates Object 512

Col. 12 Ln. 25 – 42, Update Management Component 304A Col. 15 Ln. 35 – 49).

25.   As to claim 24, Skinner teaches the distributed file system of claim 19, further

comprising: a client configured to create a cached object associated with an original

object managed by the server (Client-Side Cache Component 303A Col. 15 Ln. 20 –

27), the client including a notification handler configured to maintain a notification bond

associated with the original object in conjunction with the server (Update Management

Component 304A Col. 15 Ln. 35 – 49).

26.   As to claim 25, Skinner teaches the distributed file system of claim 19, wherein

the notification handler is configured to obtain from the server a notification log

associated with the notification bond and to update the cached object in accordance

with the notification log ("…update management components…" Col. 14 Ln. 1 – 7,

Update Management Component 304A Col. 15 Ln. 35 – 49).

27.   As to claim 26, Skinner teaches the distributed file system of claim 25, wherein

the notification log includes notifications associated with a plurality of notification bonds

(LiveCollectedUpdates 402 Col. 9 Ln. 38 – 55, LiveCollectedUpdates Object 512 Col.

12 Ln. 25 – 42).

28.   As to claim 27, Skinner teaches the distributed file system of claim 19, wherein

the notification handler is configured to maintain a bond table and wherein the bond

table includes states that relate each notification bond with a cached object and a server

that manages an original object corresponding to the cached object ("…registry…" Col.

3 Ln. 1 – 24, "…interest registry…" Col. 8 Ln. 23 – 43, Col. 10 Ln. 25 – 47, "…server

interest registry…" Col. 11 Ln. 5 – 45).

29.   As to claim 28, Skinner teaches a computer-readable medium encoded with a

data structure, comprising:

       a first indexing data field containing object identifiers, each object identifier

uniquely identifying an object that is managed by a server ("…data object…identity…"

Col. 2 Ln. 54 – 65, "…object ID or serial number…" Col. 8 Ln. 52 – 67, Col. 17 Ln. 41 –

47); and

       a second data field containing entries, each entry being indexed to an object

identifier in the first indexing data field and containing states associated with a

notification bond associated with a particular object between the server and a client that

caches the object identified by the object identifier ("…interest object…" Col. 2 Ln. 54 –

65, "…interest…" Col. 8 Ln. 52 – 67);

       wherein the first field and the second data field are created by the server and

wherein the server accesses the first indexing data field and the second data field to

determine what objects or the client require notification in response to an object related

edit event ("…data object…undergoes modification, for example, through creation,

deletion or alteration…" Col. 8 Ln. 13 - 32, "…changed data object…" Col. 13 Ln. 18 –

30, Ln. 59 – 67, "…update notification…" Col. 2 Ln. 54 – 65, "…the criteria is tested

against attributes of the data object…" Col. 8 Ln. 52 – 67).

Skinner is silent with reference to a notification bond associated with the

particular object that remains persistent through a reboot.

Arnold teaches a notification bond associated with the particular object that

remains persistent through a reboot ("…when lost links 210 are re-established…" Col. 6

Ln. 20 – 43, Col. 16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the system of Skinner with the teaching of Arnold

because the teaching of Arnold would improve the system of Skinner by allowing a

client in a low bandwidth client/server computing system to have access to updated,

timely information associated with a server (Arnold Col. 2 Ln. 23 – 30).

30.   As to claim 29, Skinner teaches the computer-readable medium of Claim 28,

wherein each object identifier in the first indexing data field includes a file path

associated with an object ("…data object…identity…" Col. 2 Ln. 54 – 65, "…object ID or

serial number…" Col. 8 Ln. 52 – 67, Col. 17 Ln. 41 – 47).

31.   As to claim 30, Skinner teaches the computer-readable medium of Claim 29,

wherein each object identifier includes a hash of the file path ("…hash table…" Col. 17

Ln. 41 – 47).

32.   As to claim 31, Skinner teaches the computer-readable medium of Claim 28,

wherein each entry of the second data field includes a bond number that uniquely

identifies a notification bond ("…interest object…" Col. 2 Ln. 54 – 65).

33.   As to claim 32, Skinner teaches the computer-readable medium of Claim 28,

wherein each entry of the second data field includes a client identifier that identifies a

client associated with a notification bond ("…interest object…" Col. 2 Ln. 54 – 65).

34.   As to claims 34 and 35, see the rejection of claims 28 and 31 respectively.

35.   As to claim 36, Skinner teaches the computer-readable medium of Claim 34,

wherein each entry of the second data field includes an original object identifier that

identifies an original object ("…data object…identity…" Col. 2 Ln. 54 – 65, "…object ID

or serial number…" Col. 8 Ln. 52 – 67, Col. 17 Ln. 41 – 47).

36.   As to claim 37, Skinner teaches the computer-readable medium of Claim 34,

wherein each entry of the second data field includes a cached object identifier that

identifies a cached object associated with an original object (Col. 15 Ln. 41 – 48).

37.   As to claim 38, see the rejection of claim 10 above.

38.   As to claim 41, Skinner teaches the distributed file system of claim 40, further

comprising: means for obtaining a notification from the server (Col. 8 Ln. 23 – 43, Col. 9

Ln. 56 – 62, "…transmission of an update notification…" Col. 10 Ln. 35 – 39, Col. 11 Ln.

18 – 26, Col. 1 – 5, Col. 14 Ln. 1 – 7); and means for updating the cached object using

the notification (Col. 14 Ln. 1 – 7, Col. 15 Ln. 20 – 27, Col. 16 Ln. 5 – 20).

39.   As to claim 42, Skinnner teaches the distributed file system of claim 40, further

comprising: means for requesting a notification log containing a notification

(LiveCollectedUpdates 402 Col. 9 Ln. 38 – 55, Col. 15 Ln. 20 – 27); and means for

synchronizing the cache object using the notification ("Update notifications…" Col. 3 Ln.

7 – 11, Step 707 Col. 13 Ln. 35 – 39, "…updates…" Col. 16 Ln. 5 – 20).

        Arnold teaches means for reconnecting with the server after a disconnected

period of time ("…when lost links 210 are re-established…" Col. 6 Ln. 20 – 43, Col. 16

Ln. 55 – 67, Col. 17 Ln. 1 – 6).

40.   As to claim 43, Skinner teaches the distributed file system of claim 40, further

comprising: means for determining an object related event ("When modifications…" Col.

2 Ln. 61 – 65, Col. 8 Ln. 33 – 35, "When data object is changed…" Col. 11 Ln. 18 – 21);

means for creating a notification in accordance with the notification bond (Col. 3 Ln. 1 –

11, "…interest registry is traversed to determine those application components that

have registered…" Col. 8 Ln. 23 – 43, "…notification is passed to each interest object

registered…" Col. 11 Ln. 1 – 26); and means for providing the notification to the client

(Col. 15 Ln. 20 – 27).

41.   As to claim 44, Skinner teaches the distributed file system of claim 40, further

comprising: means for determining an object related event ("When modifications…" Col.

2 Ln. 61 – 65, Col. 8 Ln. 33 – 35, "When data object is changed…" Col. 11 Ln. 18 – 21);

means for creating a notification in accordance with the notification bond (Col. 8 Ln. 30

– 32, Col. 9 Ln. 26 – 37); and means for recording the notification in a notification log

(LiveCollectedUpdates 402 Col. 9 Ln. 38 – 55, LiveCollectedUpdates Object 512 Col.

12 Ln. 25 – 42).

42.   As to claim 45, Skinner teaches the distributed file system of claim 40, further

comprising: means for establishing a connection with the client; and means for sending

the client the notification log ("…transmitted…" Col. 14 Ln. 1 – 7, Client-Side

Communication Management Components 305A/Server-Side Communication

Management Components 305B Col. 16 Ln. 21 – 65).

43.   As to claim 46, Skinner teaches the distributed file system of claim 40, further

comprising: means for the client to drop the notification bond ("…deleting observers…"

Col. 9 Ln. 20 – 23).

44.   As to claim 47, Skinner teaches the distributed file system of claim 40, further

comprising: means for the server to drop the notification bond ("…deleting observers…"

Col. 9 Ln. 20 – 23).

45.   As to claim 48, Skinner teaches the distributed file system of claim 40, further

comprising: means for the server to drop all notification bonds associated with the client

("…deleting observers…" Col. 9 Ln. 20 – 23).

46.   As to claim 49, Skinner teaches the distributed file system of claim 48, further

comprising: means for the server to reset clear states associated with the dropped

notification bonds ("…setting of a "changed" flag…" Col. 11 Ln. 31 – 40).

47.   Claims 33 and 51-64 are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Pat. No. 6,721,740 B1 to Skinner et al. in view of U.S. Pat.

No. 6,263,360 B1 to Arnold et al., as applied to claim 28 above and further in view

of U.S. Pub. No. 2003/0051068 A1 to Eldridge et al.

48.   As to claim 33, Arnold and Skinner are silent with reference to the computer-

readable medium of Claim 28, wherein each entry of the second data field includes a

type identifier that identifies a type associated with a notification bond.

Eldridge teaches the computer-readable medium of Claim 28, wherein each entry

of the second data field includes a type identifier that identifies a type associated with a

notification bond ("…notification type…" page 4 paragraph 0052).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the system of Arnold and Skinner with the teaching of

Eldridge because the teaching of Eldridge would improve the system of Arnold and

Skinner by providing a technique for data synchronization among processes that allow

for a particular type of notification (Eldridge page 4 paragraph 0052).

49.   As to claim 51, Skinner teaches a computer-implemented method for

synchronizing cached objects maintained by a client with the corresponding original

objects maintained by a server (figure 3), the computer-implemented method

comprising:

creating cached objects from original objects ("…data object or set of data

objects…" Col. 2 Ln. 54 – 65, "…change is sent to those application components…"

Col. 8 Ln. 30 – 32);

establishing a notification bond associated with one of the original objects with

the server for each of the cached objects, the notification bonds enabling the client to

obtain a notification from the server in response to an edit associated with the original

object ("…interest object…" Col. 2 Ln. 54 – 65, Col. 3 Ln. 1 – 19, Col. 8 Ln. 23 – 29,

"…observer list…" Col. 9 Ln. 20 – 23, Server Interest Registry 501/503 Col. 11 Ln. 5 –

13, figure 6 Col. 12 Ln. 56 – 67, Col. 13 Ln. 1 – 16);

the object related event is associated with a modification of the original object ("…data object…undergoes modification, for example, through creation, deletion or alteration…" Col. 8 Ln. 13 - 32, "…changed data object…" Col. 13 Ln. 18 – 30, Ln. 59 – 67); wherein each object includes a notification bond associated with the original objects ("…interest object…" Col. 2 Ln. 54 – 65, Col. 3 Ln. 1 – 19, Col. 8 Ln. 23 – 29);

persistently maintaining, by the server, server bond states related to the original objects, the server bond states corresponding to notification bonds associated with the original objects ("…interest object…" Col. 8 Ln. 23 – 29, "…observer list…" Col. 9 Ln. 20 – 23, Server Interest Registry 501/503 Col. 11 Ln. 5 – 13, figure 6 Col. 12 Ln. 56 – 67, Col. 13 Ln. 1 – 16), each notification bond enabling the client to obtain a notification from the server when at least one of the original object has been modified such that a copy of the original object may be synchronized and maintained on the client after the object has been edited by a user associated with the server ("…data objects undergo modifications, for example, through creation, deletion, or alteration…" Col. 8 Ln. 13 – 22, "When a change is made…interest registry is traversed…" Col. 8 Ln. 23 – 43); and persistently maintaining, by the client, client bond states corresponding to the server bond states ("…same as or similar to…" Col. 11 Ln. 5 – 11).

Skinner is silent with reference to the modification to the original object is one of an edit to a word processing document, an edit to a spreadsheet document or an edit to an image file and the notification bond remaining persistent through a reboot of the client and server.

Arnold teaches the notification bond remaining persistent through a reboot of the client and server ("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43, Col. 16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Skinner with the teaching of Arnold because the teaching of Arnold would improve the system of Skinner by allowing a client in a low bandwidth client/server computing system to have access to updated, timely information associated with a server (Arnold Col. 2 Ln. 23 – 30).

Eldridge teaches the modification to the original object as one of an edit to a word processing document, an edit to a spreadsheet document or an edit to an image file ("...selected events...event types..." page 1 paragraph 0010).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Arnold and Skinner with the teaching of Eldridge because the teaching of Eldridge would improve the system of Arnold and Skinner by providing a technique for data synchronization among processes that allow for a particular type of notification (Eldridge page 4 paragraph 0052).

50.   As to claim 52, Arnold teaches the computer-implemented method of claim 51, further comprising reestablishing the server bond states after a server reboot or restart ("...sync operation..." Col. 5 Ln. 36 – 59, Notification Module 132 Col. 10 Ln. 9 – 28).

51.   As to claim 53, Arnold teaches the computer-implemented method of claim 52,
further comprising recovering notifications associated with the notification bonds after a
server reboot or restart ("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43,
Col. 16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

52.   As to claim 54, Arnold teaches the computer-implemented method of claim 51,
further comprising reestablishing the client bond states after a client reboot or restart
("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43, Col. 16 Ln. 55 – 67,
Col. 17 Ln. 1 – 6).

53.   As to claim 55, Arnold teaches the computer-implemented method of claim 54,
further comprising recovering notifications associated with the notification bonds after a
server reboot or restart ("...when lost links 210 are re-established..." Col. 6 Ln. 20 – 43,
Col. 16 Ln. 55 – 67, Col. 17 Ln. 1 – 6).

54.   As to claim 56, Skinner teaches the computer-implemented method of claim 51,
further comprising determining, by the server, to drop a notification bond ("...refined..."
Col. 3 Ln. 12 – 16, "...deleting observers..." Col. 9 Ln. 20 22, Col. 11 Ln. 31 – 40,
"...successive refinement..." Col. 12 Ln. 44 – 55); performing, by the server, an
operation to drop the notification bond ("...refined..." Col. 3 Ln. 12 – 16, "...deleting
observers..." Col. 9 Ln. 20 22, Col. 11 Ln. 31 – 40, "...successive refinement..." Col. 12

Ln. 44 – 55); and providing, by the server, a notification to the client for dropping the

notification bond ("…receive notifications…" Col. 10 Ln. 8 – 10).

55.   As to claim 57, Skinner teaches the computer-implemented method of claim 56,

wherein performing the operation commits the server to dropping the notification bond

("…refined…" Col. 3 Ln. 12 – 16, "…deleting observers…" Col. 9 Ln. 20 22, Col. 11 Ln.

31 – 40, "…successive refinement…" Col. 12 Ln. 44 – 55).

56.   As to claim 58, Skinner teaches the computer-implemented method of claim 57,

wherein performing the operation is completed before providing the notification to the

client ("…receive notifications…" Col. 10 Ln. 8 – 10).

57.   As to claim 59, Skinner teaches the computer-implemented method of claim 51,

further comprising determining, by the server, to drop all notification bonds associated

with the client ("…refined…" Col. 3 Ln. 12 – 16, "…deleting observers…" Col. 9 Ln. 20

22, Col. 11 Ln. 31 – 40, "…successive refinement…" Col. 12 Ln. 44 – 55); performing,

by the server, an operation to drop the notification bonds ("…refined…" Col. 3 Ln. 12 –

16, "…deleting observers…" Col. 9 Ln. 20 22, Col. 11 Ln. 31 – 40, "…successive

refinement…" Col. 12 Ln. 44 – 55); and providing, by the server, a notification to the

client for dropping the notification bonds ("…receive notifications…" Col. 10 Ln. 8 – 10).

58.   As to claim 60, Skinner teaches the computer-implemented method of claim 59,

wherein performing the operation commits the server to dropping the notification bonds

("...refined..." Col. 3 Ln. 12 – 16, "...deleting observers..." Col. 9 Ln. 20 22, Col. 11 Ln.

31 – 40, "...successive refinement..." Col. 12 Ln. 44 – 55).

59.   As to claim 61, Skinner teaches the computer-implemented method of claim 60,

wherein performing the operation is completed before providing the notification to the

client ("...receive notifications..." Col. 10 Ln. 8 – 10).

60.   As to claim 62, Skinner teaches the computer-implemented method of claim 51,

further comprising determining, by the client, to drop a notification bond ("...refined..."

Col. 3 Ln. 12 – 16, "...deleting observers..." Col. 9 Ln. 20 22, Col. 11 Ln. 31 – 40,

"...successive refinement..." Col. 12 Ln. 44 – 55); performing, by the client, an operation

to drop the notification bond ("...refined..." Col. 3 Ln. 12 – 16, "...deleting observers..."

Col. 9 Ln. 20 22, Col. 11 Ln. 31 – 40, "...successive refinement..." Col. 12 Ln. 44 – 55);

and requesting the server to drop the notification bond ("...receive notifications..." Col.

10 Ln. 8 – 10).

61.   As to claim 63, Skinner teaches the computer-implemented method of claim 62,

wherein performing the operation commits the client to dropping the notification bond

("...receive notifications..." Col. 10 Ln. 8 – 10).

62.   As to claim 64, Skinner teaches the computer-implemented method of claim 63,

wherein performing the operation is completed before requesting the server to drop the

notification bond ("...receive notifications..." Col. 10 Ln. 8 – 10).

63.   Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Pat. No. 6,721,740 B1 to Skinner et al. in view of U.S. Pat. No. 6,263,360 B1 to

Arnold et al., as applied to claims 1,40 or 51 above and further in view of U.S. Pat.

No. 6,941,326 B2 to Kadyk et al.

64.   As to claim 39, Arnold and Skinner are silent with reference to the computer-

readable medium of Claim 34, further comprising a third data field that includes a

notification log offset.

       Kadyk teaches the computer-readable medium of Claim 34, further comprising a

third data field that includes a notification log offset ("...token..." Col. 9 Ln. 6 – 63, Col.

12 Ln. 1 – 3).

       It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the system of Arnold and Skinner with the teaching of

Kadyk because the teaching of Kadyk would improve the system of Arnold and Skinner

by providing a technique for promptly identifying the starting point for a next data

synchronization (Kadyk Col. 9 Ln. 62 – 63).

**65.   Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.
Pat. No. 6,721,740 B1 to Skinner et al. in view of U.S. Pat. No. 7,099,926 B1 to Ims
et al.**

66.   As to claim 50, Skinner teaches a computer-implemented method for maintaining
cached objects that correspond to original objects managed by a server (figure 3), the
computer-implemented method comprising:

creating cached objects from original objects ("…data object or set of data
objects…" Col. 2 Ln. 54 – 65, "…change is sent to those application components…"
Col. 8 Ln. 30 – 32);

establishing a plurality of notification bonds, each associated with a particular
one of the cached objects, between the server and the computer, the notification bonds
enabling the client to obtain a notification from the server in response to an object
related event associated with the original object in which the notification bond is
associated ("…interest object…" Col. 2 Ln. 54 – 65, Col. 3 Ln. 1 – 19, Col. 8 Ln. 23 –
29, "…observer list…" Col. 9 Ln. 20 – 23, Server Interest Registry 501/503 Col. 11 Ln. 5
– 13, figure 6 Col. 12 Ln. 56 – 67, Col. 13 Ln. 1 – 16);

obtaining notifications from the server about changes made to at least one of the
original objects during the period of time ("…update notification…" Col. 2 Ln. 66 – 67,
Col. 3 Ln. 1 – 24); and

synchronizing a cache object corresponding to the at least one original object using the notifications, without synchronizing all of the cached objects ("Update notifications are sent only..." Col. 3 Ln. 1 – 11).

Skinner is silent with reference to the notification bond remains persistent through a reboot of the client and server and each object includes a notification bond and reestablishing a communication link between the client and the server after a period of time without a communication link.

Ims teaches each object includes the notification bond remains persistent through a reboot of the client and server ("...creates and registers objects..." Col. 20 Ln. 30 –35, "...refresh upon connection..." Col. 20 Ln. 35 – 42) and reestablishing a communication link between the client and the server after a period of time without a communication link ("...refresh upon connection..." Col. 20 Ln. 35 – 42).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Arnold with the teaching of Ims because the teaching of Ims would improve the system of Arnold by providing a technique for asynchronously synchronizing or refreshing data object after a reconnection between a client and a server (Ims Col. 5 Ln. 32 – 50).

Response to Arguments

Applicant's arguments filed 8/22/08 have been fully considered but they are not persuasive.

Applicant argues in substance that the Arnold prior art does not teach notification bond(s) that are individually associated with particular (cached) objects wherein each notification bond persists through a reboot.

The Examiner respectfully traverses Applicant argument:

The Arnold prior art discloses a process and apparatus for maintaining updated information on a distributed client/server object-oriented computing system. The distributed client/server object-based computing systems include at least a server which has a **server object list** that is arranged to include objects that are to be updated. The distributed client/server object-based computing systems also include a client which has a **client object list** that contains an object in which the client has interest (i.e. the client object list identifies to the server know which objects the client has interest in been notified when an update occurs (notification bond)). The objects that are to be updated include the object in which the client has interest, and the server is arranged to send a message to the client that indicates that the object in which the client has interested should be updated on the client. The client and the server may be in communication over a **low-bandwidth and/or intermittent links**.

The clients in the distributed client/server object-based computing systems may move in and out of the range of the servers if it is communicably linked using an intermittent, low-bandwidth links. When a client is out of the RF range of the server, the client typically may not communicate with the server and as a result, the client may not access information, particularly updated information, from the server. The server has

the capability to "save state information associated with each client 206" including the

client object list (the notification bond(s) between the client and the server).

Besides having updated version of server object, the client also maintains

persistent copies of the client/server objects and object lists through low-bandwidth

and/or intermittent links and the server restores the current state of the client during

intermittent links or when links are lost using the saved/persistent states (including the

client object list).

Also of note is that the Skinner prior art teaches the idea of registering an interest

object (notification bond) on any data object that a client is interested in been notified of

an update. This implies that there are plural or multiple interest objects/notification

bonds since there is an interest object created each time the client requests to be

notified of an update.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Charles E. Anya whose telephone number is 571-272-

3757. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cea.

/Li B. Zhen/
Primary Examiner, Art Unit 2194